REMARKS

Claims 1, 3-19, 26, 28-33, 44, and 45 are pending in the application. In the present response Claims 7, 28, 41-45 have been canceled without prejudice or disclaimer. Claims 2, 5, 6, 8-10, 20-25, 27, 34-40, and 46-50 have been withdrawn as being drawn to a non-elected invention, and thus are also canceled. Claims 1, 3, 4, 11-14, 26, and 29-31 have been amended, and new Claims 51-69 have been added. New Claims 51-69 are drawn to the subject matter being prosecuted. After entering the present amendment Claims 1, 3, 4, 11-19, 26, 29-33, and 51-69 remain pending.

Pages 16 and 30 of the specification as filed have been amended to remove hyperlinks. The specification and the Sequence Listing have been amended to ensure that the unknowns recited in the specification match those in the Sequence Listing. Position 292 is Asp or Glu, position 293 is Gln or His, and position 294 is Ile or Thr. No new matter is believed to be added.

Claims 1, 3, 4, 11-14, 26, and 29-31 have been amended as suggested in the Office Action and to remove mention of non-elected inventions.

Claims 51-69 have been added to more clearly express that which Applicants consider their invention. Support for these new claims can be found throughout the sprecification, and more specifically in the Sequence Listing where new Claim 51 is drawn to the amino acid sequence of SEQ ID NO:2, new Claim 52 is drawn to the amino acid sequence of SEQ ID NO:16, new Claim 53 is drawn to the amino acid sequence of SEQ ID NO:18, new Claim 54 is drawn to the amino acid sequence of SEQ ID NO:20, new Claim 55 is drawn to the amino acid sequence of SEQ ID NO:22, new Claim 56 is drawn to the amino acid sequence of SEQ ID NO:24, new Claim 57 is drawn to the amino acid sequence of SEQ ID NO:26, new Claim 58 is drawn to the amino acid sequence of SEQ ID NO:28, new Claim 59 is drawn to the amino acid sequence of SEQ ID NO:30, new Claim 60 is drawn to the amino acid sequence of SEQ ID NO:32, new Claim 61 is drawn to the amino acid sequence of SEQ ID NO:34, new Claim 62 is drawn to the amino acid sequence of SEQ ID NO:36, new Claim 63 is drawn to the amino acid sequence of SEQ ID NO:38, new Claim 64 is drawn to the amino acid sequence of SEQ ID NO:40, new Claim 65 is drawn to the amino acid sequence of SEQ ID NO:61, new Claim 66 is drawn to the amino acid sequence of SEQ ID NO:55, new Claim 67 is drawn to the amino acid sequence of SEQ ID NO:57, new Claim 68 is drawn to the amino acid sequence of SEQ ID NO:59, and new Claim 69 is drawn to the amino acid sequence of SEQ ID NO:48. No new matter is believed to be at issue.

A new set of figures accompanies the present response.

Claim Objections

Claim 10 is objected because it is partially drawn to non-elected inventions. Claim 10 has been withdrawn.

Claim Rejections

35 USC § 101

Claims 1, 3,4, 10, 11, and 45 are rejected because the claimed invention is directed to non-statutory subject matter. The claims have been amended making this rejection moot.

35 USC § 112, Second Paragraph

Claims 1, 3, 4, 10-19, 26, 28-33, 44 are rejected as being indefinite.

Claim 1, the specification, and the Sequence Listing have been amended so that the proper unknowns are listed making rejection to this claim moot.

Claims 1, 3, 4, 11, 12, 13, 26 (claims 10, 11, 14-19, 28-33 dependent thereon) havebeen either canceled or amended as suggested in the Office Action. Thus, this rejection has been overcome.

Claim 10 has been withdrawn.

Claim 14 has been amended in accordance with the suggestions in the Office Action. Applicants note, however, that the polynucleotide encoding the maize R region is not a segment of the polynucleotide encoding the maize transcription factor C1. The chimera of claim 14 is such that the R region polynucleotide is between the C1 activation domain polynucleotide and the C1 binding domain polynucleotide. As set forth in the specification as filed, the R region and the C1 domains are encoded by separate genes, see specification, page 6, lines 12-14 and page 49, lines 25-26.

Claim 26 has been amended so that the host cell may be transformed with either the recombinant DNA fragment of Claim 11 or with the recombinant DNA fragment of Claim 11 together with a second recombinant DNA fragment comprising a nucleic acid sequence encoding a polypeptide that regulates expression of at least one enzyme of the phenylpropanoid pathway. These changes obviate the rejection.

Mention of Claim 27 has been removed from Claims 29-31.

Claim 28 has been canceled.

Claim 44 has been canceled.

35 USC § 112, First Paragraph

Claims 3, 4, and 44 are rejected because the specification does not disclose the critical structural elements in SEQ ID NO:66 that are associated with isoflavone synthase activity. Claim 44 has been canceled. The specification discloses amino acid sequences for 20 plant isoflavone synthases. The consensus sequence in the specification shows that there are 460 non-variant amino acids and 61 amino acids

that vary among the 20 amino acid sequences. In other words, 61 amino acids or 8.5% of 521 amino acids in a plant isoflavone synthase vary. These data indicate the specific amino acid changes in the protein sequence which nonetheless conserve isoflavone synthase activity.

Claims 3 and 4 have been amended to recite the function of the isoflavone synthase. No undue experimentation is needed since 91.5% of the amino acids are known and the function of the enzyme is clearly stated in the specification and claims.

35 USC § 102 (a) and (b)

Claims 1, 3, 4, 10-12, 15, 26, 28, 29, and 44 are rejected as anticipated by Steele et al., Archives of Biochemistry and Biophysics, 1999, vol. 37(1):146-150 (hereinafter "Steele et al.")., who teach a soybean isoflavone synthase and its corresponding polynucleotide.

Accompanying the instant response is a Declaration under 37 C.F.R. §1.131 by Applicant, Dr. Brian McGonigle, with attached Exhibit A and curriculum vitae, establishing the conception and reduction to practice of the present invention at a date prior to July 1, 1999, the publication date of the Steele et al. reference. As seen from Dr. McGonigle's declaration, Applicants were the first, to their knowledge, to conceive and reduce to practice a polynucleotide having isoflavone synthase activity. This was completed prior to the publication of Steele et al. Thus, the present invention is not anticipated by Steele et al.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. §102(a).

Claim 3 is rejected under 102(b) as anticipated by Siminszky et al. (EMBL Accession Number AF022462) because the polynucleotide of Siminszky et al. encodes an isoflavone synthase. As stated in the Entrez Report (of record, complimentary copy included to facilitate prosecution) the encoded protein of Siminszky et al. is identified as a cytochrome P450 monooxygenase. The present application discloses, for the first time, that the encoded polypeptide has isoflavone synthase activity. For these reasons, it is believed that, the teachings of Siminszky et al. do not anticipate the present invention.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,

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